

# Missouri Department of Natural Resources



## PUBLIC NOTICE

### DRAFT MISSOURI STATE OPERATING PERMIT

DATE: July 30, 2004

In accordance with the state Clean Water Law, Chapter 644, RSMo, Clean Water Commission regulation 10 CSR 20-6.010, and the federal Clean Water Act, the applicants listed herein have applied for authorization to either discharge to waters of the state or to operate a no-discharge wastewater treatment facility. The proposed permits for these operations are consistent with applicable water quality standards, effluent standards and/or treatment requirements or suitable timetables to meet these requirements (see 10 CSR 20-7.015 and 7.031). All permits will be issued for a period of five years, unless noted otherwise in the Public Notice for that discharge.

On the basis of preliminary staff review and the application of applicable standards and regulations, the Missouri Department of Natural Resources (MDNR), as administrative agent for the Missouri Clean Water Commission, proposes to issue a permit(s) subject to certain effluent limitations, schedules, and special conditions. The proposed determinations are tentative pending public comment.

Persons wishing to comment on the proposed permit conditions are invited to submit them in writing to the Department of Natural Resources, Water Protection Program, P.O. Box 176, Jefferson City, Missouri 65102, ATTN: Peter Goode, Professional Engineer. Please include the permit number in all comment letters.

Comments should be confined to the issues relating to the proposed action and permit(s) and the effect on water quality. The MDNR may not consider as relevant comments or objections to a permit based on issues outside the authority of the Clean Water Commission, (see Curdt v. Mo. Clean Water Commission, 586 S.W.2d 58 Mo. App. 1979).

All comments must be postmarked by August 29, 2004 or received in our office by 5:00 p.m. on September 1, 2004. The requirement of a signed document makes it impossible to accept email comments for consideration at this time. Comments will be considered in the formulation of all final determinations regarding the applications. If response to this notice indicates significant public interest, a public meeting or hearing may be held after due notice for the purpose of receiving public comment on the proposed permit or determination. Public hearings and/or issuance of the permit will be conducted or processed according to 10 CSR 20-6.020.

Copies of all draft permits and other information including copies of applicable regulations are available for inspection and copying at DNR's website, <http://www.dnr.state.mo.us/wpscd/wpcp/homewpcp.htm>, or at the Department of Natural Resources, Water Protection Program, 205 Jefferson Street, P.O. Box 176, Jefferson City, Missouri 65102, between the hours of 8:00 a.m. and 5:00 p.m., Monday through Friday.

Public Notice Date: July 30, 2004

Permit Number: MO-0001121

Southeast Regional Office

<b>FACILITY NAME AND ADDRESS</b>	<b>NAME AND ADDRESS OF OWNER</b>
Doe Run, Glover Smelter Route 1, Box 60 Annapolis, MO 63620	The Doe Run Company 1801 Park 270 Place, Suite 300 St. Louis, MO 63146
<b>RECEIVING STREAM &amp; LEGAL DESCRIPTION</b>	<b>TYPE OF DISCHARGE</b>
Scoggins Branch/Big Creek (Big Creek), Sec. 11, T32N, R3E, Iron County	Industrial, reissuance

STATE OF MISSOURI  
**DEPARTMENT OF NATURAL RESOURCES**

MISSOURI CLEAN WATER COMMISSION



**MISSOURI STATE OPERATING PERMIT**

In compliance with the Missouri Clean Water Law, (Chapter 644 R.S. Mo. as amended, hereinafter, the Law), and the Federal Water Pollution Control Act (Public Law 92-500, 92<sup>nd</sup> Congress) as amended,

Permit No. MO-0001121

Owner: The Doe Run Company  
Address: 1801 Park 270 Place, Suite 300, St. Louis, MO 63146

Continuing Authority: Same as above  
Address: Same as above

Facility Name: Doe Run, Glover Smelter  
Address: Route 1, Box 60, Annapolis, MO 63620

Legal Description: NW  $\frac{1}{4}$ , Sec. 11, T32N, R3E, Iron County

Receiving Stream: Scoggins Branch/Big Creek (U)  
First Classified Stream and ID: Big Creek (P) (02916)  
USGS Basin & Sub-watershed No.: (08020202-040001)

is authorized to discharge from the facility described herein, in accordance with the effluent limitations and monitoring requirements as set forth herein:

**FACILITY DESCRIPTION**

See page 2

This permit authorizes only wastewater discharges under the Missouri Clean Water Law and the National Pollutant Discharge Elimination System; it does not apply to other regulated areas. This permit may be appealed in accordance with Section 644.051.6 of the Law.

Effective Date

Stephen M. Mahfood, Director, Department of Natural Resources  
Executive Secretary, Clean Water Commission

Expiration Date  
MO 780-0041 (10-93)

Jim Hull, Director of Staff, Clean Water Commission

FACILITY DESCRIPTION (continued)

Outfall #001 - SIC #3339

Discharge from the sanitary waste extended aeration plant. This includes flow from employee hand wash, and respirator wash (categorical flows), and employee showers (non-categorical flow). Sludge disposal is by contract hauler. Design population equivalent is 300. Design flow is 30,000 gallons per day. Actual flow is 12,000 gallons per day. Design sludge production is 6.0 dry tons per year.

Outfall #002 - SIC #3339

Non-contact cooling water. Design flow is 320,000 gallons per day. Actual flow is 290,000 gallons per day.

Outfall #003 - SIC #3339

Stormwater, process water, and sanitary water is treated in a wastewater plant with a design capacity of 288,000 gallons per day. The treatment consists of the following unit processes:

1. pH adjustment with lime
2. Sedimentation
3. Clarification
4. Filtration
5. Sludge thickening/dewatering

Total design flow is 638,000 GPD.

Water Quality Monitoring Point #004 - in Big Creek at an old, broken-up low-water bridge near the center of Section 11, T32N, R3E, Iron County.

All Source Monitoring Point #005 - at Parshall Flume below Outfalls #001, 002, and 003.

Upstream Monitoring Point - on Big Creek, SW 3, SW 3, Sec. 35, T33N, R3E.

Downstream Monitoring Point - on Big Creek before Little Creek Confluence, SE, NW, Sec. 14, T32N, R3W.

					PAGE NUMBER 3 of 14	
<b>A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS</b>					PERMIT NUMBER MO-0001121	
The permittee is authorized to discharge from outfall(s) with serial number(s) as specified in the application for this permit. The final effluent limitations shall become effective upon issuance and remain in effect until expiration of the permit. Such discharges shall be controlled, limited and monitored by the permittee as specified below:						
OUTFALL NUMBER AND EFFLUENT PARAMETER(S)	UNITS	FINAL EFFLUENT LIMITATIONS			MONITORING REQUIREMENTS	
		DAILY MAXIMUM	WEEKLY AVERAGE	MONTHLY AVERAGE	MEASUREMENT FREQUENCY	SAMPLE TYPE
<u>Outfall #001</u>						
Flow	MGD	*		*	once/month	24 hr. total
Chlorine, Total Residual (Note 1)	mg/L	0.019		0.019	once/month	grab
Total Suspended Solids	lbs/day	1.467		0.930	once/month	grab
Total Suspended Solids	mg/L		45	30	once/month	grab
Lead, Total Recoverable	lbs/day	0.0046		0.0019	once/month	grab
Lead, Total Recoverable	µg/L	80		80	once/month	grab
Zinc, Total Recoverable	lbs/day	0.0169		0.00578	once/month	grab
Zinc, Total Recoverable	µg/L	1,180		1,180	once/month	grab
Cadmium, Total Recoverable	lbs/day	0.0033		0.0013	once/month	grab
Cadmium, Total Recoverable	µg/L	46		46	once/month	grab
MONITORING REPORTS SHALL BE SUBMITTED <u>MONTHLY</u> ; THE FIRST REPORT IS DUE _____.						
Biochemical Oxygen Demands	mg/L		45	30	once/quarter*****	grab
pH - Units	SU	****			once/quarter*****	grab
Fecal Coliform***	#/100mL	1000		400	once/quarter	grab
Copper, Total Recoverable	µg/L	46		46	once/quarter*****	grab
Thallium, Total Recoverable	µg/L	56		56	once/quarter*****	grab
Hardness	mg/L	*		*	once/quarter*****	grab
MONITORING REPORTS SHALL BE SUBMITTED <u>QUARTERLY</u> ; THE FIRST REPORT IS DUE _____. THERE SHALL BE NO DISCHARGE OF FLOATING SOLIDS OR VISIBLE FOAM IN OTHER THAN TRACE AMOUNTS.						
<b>B. STANDARD CONDITIONS</b>						
IN ADDITION TO SPECIFIED CONDITIONS STATED HEREIN, THIS PERMIT IS SUBJECT TO THE ATTACHED <u>Parts I &amp; III</u> STANDARD CONDITIONS DATED <u>October 1, 1980</u> , AND HEREBY INCORPORATED AS THOUGH FULLY SET FORTH HEREIN.						

					PAGE NUMBER 4 of 14	
<b>A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS</b>					PERMIT NUMBER MO-0001121	
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		DAILY MAXIMUM	WEEKLY AVERAGE	MONTHLY AVERAGE	MEASUREMENT FREQUENCY	SAMPLE TYPE
<u>Outfall #002</u>						
Flow	MGD	*			once/month	24 hr. total
Lead, Total Recoverable	µg/L	36		36	once/month	grab
Copper, Total Recoverable	µg/L	46		46	once/month	grab
Cadmium, Total Recoverable	µg/L	18		18	once/month	grab
Zinc, Total Recoverable	µg/L	460		460	once/month	grab
Chlorine, Total Residual	mg/L	*		*	Note 1	grab
MONITORING REPORTS SHALL BE SUBMITTED <u>MONTHLY</u> ; THE FIRST REPORT IS DUE _____.						
Temperature	°F	*****			once/quarter*****	grab
pH - Units	SU	****			once/quarter*****	grab
Thallium, Total Recoverable	µg/L	56		56	once/quarter*****	grab
MONITORING REPORTS SHALL BE SUBMITTED <u>QUARTERLY</u> ; THE FIRST REPORT IS DUE _____. THERE SHALL BE NO DISCHARGE OF FLOATING SOLIDS OR VISIBLE FOAM IN OTHER THAN TRACE AMOUNTS.						
<b>B. STANDARD CONDITIONS</b>						
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					PAGE NUMBER 5 of 14	
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OUTFALL NUMBER AND EFFLUENT PARAMETER(S)	UNITS	FINAL EFFLUENT LIMITATIONS			MONITORING REQUIREMENTS	
		DAILY MAXIMUM	WEEKLY AVERAGE	MONTHLY AVERAGE	MEASUREMENT FREQUENCY	SAMPLE TYPE
<u>Outfall #003 (Note 3)</u>						
Flow	MGD	*		*	daily	24 hr. total
Lead, Total Recoverable	lbs/day	0.673		0.264	once/month	grab
Streamflow > 8 cfs	mg/L	0.080		0.080	once/month	grab
< 8 cfs	mg/L	0.027		0.027	once/month	grab
Zinc, Total Recoverable	lbs/day	2.452		0.745	once/month	grab
Streamflow > 8 cfs	mg/L	2.05		1.4	once/month	grab
< 8 cfs	mg/L	0.34		0.34	once/month	grab
Cadmium, Total Recoverable	lbs/day	0.481		0.192	once/month	grab
Streamflow > 8 cfs	mg/L	0.046		0.046	once/month	grab
< 8 cfs	mg/L	0.013		0.013	once/month	grab
Thallium, Total Recoverable	mg/L	0.176		0.176	once/month	grab
Streamflow > 8 cfs	mg/L	0.011		0.011	once/month	grab
< 8 cfs						
Total Suspended Solids	lbs/day	36.056		24.036	once/month	grab
	mg/L	*		*	once/month	grab
MONITORING REPORTS SHALL BE SUBMITTED <u>MONTHLY</u> ; THE FIRST REPORT IS DUE _____.						
Whole Effluent Toxicity (WET) Test	% Survival	See Special Condition #11			once/year in October	24 hr. composite
MONITORING REPORTS SHALL BE SUBMITTED <u>ANNUALLY</u> ; THE FIRST REPORT IS DUE _____. THERE SHALL BE NO DISCHARGE OF FLOATING SOLIDS OR VISIBLE FOAM IN OTHER THAN TRACE AMOUNTS.						
<b>B. STANDARD CONDITIONS</b>						
IN ADDITION TO SPECIFIED CONDITIONS STATED HEREIN, THIS PERMIT IS SUBJECT TO THE ATTACHED <u>Parts I &amp; III</u> STANDARD CONDITIONS DATED <u>October 1, 1980</u> , AND HEREBY INCORPORATED AS THOUGH FULLY SET FORTH HEREIN.						

<b>A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS</b>					PAGE NUMBER 6 of 14	
					PERMIT NUMBER MO-0001121	
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OUTFALL NUMBER AND EFFLUENT PARAMETER(S)	UNITS	FINAL EFFLUENT LIMITATIONS			MONITORING REQUIREMENTS	
		DAILY MAXIMUM	WEEKLY AVERAGE	MONTHLY AVERAGE	MEASUREMENT FREQUENCY	SAMPLE TYPE
<u>Water Quality Monitoring Point #004 (Notes 2, 4 and 6)</u>						
Flow	MGD	*		*	once/month	24 hr. estimate
Hardness	mg/L	*		*	once/month	grab
Temperature	°F	*		*	once/month	grab
pH - Units	SD	*		*	once/month	grab
Lead, Dissolved	µg/L	*		*	once/month	grab
Lead, Total Recoverable	µg/L	*		*	once/month	grab
Zinc, Dissolved	µg/L	*		*	once/month	grab
Zinc, Total Recoverable	µg/L	*		*	once/month	grab
Cadmium, Dissolved	µg/L	*		*	once/month	grab
Cadmium, Total Recoverable	µg/L	*		*	once/month	grab
Thallium, Dissolved	µg/L	*		*	once/month	grab
Thallium, Total Recoverable	µg/L	*		*	once/month	grab
Copper, Dissolved	µg/L	*		*	once/month	grab
Copper, Total Recoverable	µg/L	*		*	once/month	grab
MONITORING REPORTS SHALL BE SUBMITTED MONTHLY; THE FIRST REPORT IS DUE _____. THERE SHALL BE NO DISCHARGE OF FLOATING SOLIDS OR VISIBLE FOAM IN OTHER THAN TRACE AMOUNTS.						
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<b>A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS</b>					PAGE NUMBER 7 of 14	
					PERMIT NUMBER MO-0001121	
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		DAILY MAXIMUM	WEEKLY AVERAGE	MONTHLY AVERAGE	MEASUREMENT FREQUENCY	SAMPLE TYPE
<u>Upstream Monitoring Point</u> (Note 6)						
Flow	MGD	*		*	once/month	24 hr. estimate
Temperature	°F	*		*	once/month	grab
pH - Units	SU	*		*	once/quarter	grab
Lead, Dissolved	µg/L	*		*	once/quarter	grab
Lead, Total Recoverable	µg/L	*		*	once/quarter	grab
Zinc, Dissolved	µg/L	*		*	once/quarter	grab
Zinc, Total Recoverable	µg/L	*		*	once/quarter	grab
Cadmium, Dissolved	µg/L	*		*	once/quarter	grab
Cadmium, Total Recoverable	µg/L	*		*	once/quarter	grab
Thallium, Dissolved	µg/L	*		*	once/quarter	grab
Thallium, Total Recoverable	µg/L	*		*	once/quarter	grab
Copper, Dissolved	µg/L	*		*	once/quarter	grab
Copper, Total Recoverable	µg/L	*		*	once/quarter	grab
<u>Downstream Monitoring Point</u> (Note 6)						
Flow	MGD	*		*	once/month	24 hr. estimate
Temperature	°F	*		*	once/month	grab
pH - Units	SU	*		*	once/quarter	grab
Lead, Dissolved	µg/L	*		*	once/quarter	grab
Lead, Total Recoverable	µg/L	*		*	once/quarter	grab
Zinc, Dissolved	µg/L	*		*	once/quarter	grab
Zinc, Total Recoverable	µg/L	*		*	once/quarter	grab
Cadmium, Dissolved	µg/L	*		*	once/quarter	grab
Cadmium, Total Recoverable	µg/L	*		*	once/quarter	grab
Thallium, Dissolved	µg/L	*		*	once/quarter	grab
Thallium, Total Recoverable	µg/L	*		*	once/quarter	grab
Copper, Dissolved	µg/L	*		*	once/quarter	grab
Copper, Total Recoverable	µg/L	*		*	once/quarter	grab
MONITORING REPORTS SHALL BE SUBMITTED <u>QUARTERLY</u> ; THE FIRST REPORT IS DUE _____. THERE SHALL BE NO DISCHARGE OF FLOATING SOLIDS OR VISIBLE FOAM IN OTHER THAN TRACE AMOUNTS.						
<b>B. STANDARD CONDITIONS</b>						
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					PAGE NUMBER 8 of 14	
<b>A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS</b>					PERMIT NUMBER MO-0001121	
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OUTFALL NUMBER AND EFFLUENT PARAMETER(S)	UNITS	FINAL EFFLUENT LIMITATIONS			MONITORING REQUIREMENTS	
		DAILY MAXIMUM	WEEKLY AVERAGE	MONTHLY AVERAGE	MEASUREMENT FREQUENCY	SAMPLE TYPE
<u>Outfall #005 - Waste Stream Monitoring Point</u>						
Flow	MGD	*		*	monthly	24 hr. total
Lead, Dissolved	µg/L	*		*	monthly	grab
Lead, Total	µg/L	*		*	monthly	grab
Zinc, Dissolved	µg/L	*		*	monthly	grab
Zinc, Total	µg/L	*		*	monthly	grab
Cadmium, Dissolved	µg/L	*		*	monthly	grab
Cadmium, Total	µg/L	*		*	monthly	grab
Copper, Dissolved	µg/L	*		*	monthly	grab
Copper, Total	µg/L	*		*	monthly	grab
MONITORING REPORTS SHALL BE SUBMITTED <u>MONTHLY</u> ; THE FIRST REPORT IS DUE _____.						
<u>Outfall #006 - Stormwater retention pond emergency overflow</u>						
Flow	MGD	*			once/discharge/ day	24 hr. estimate
pH - Units	SU	*****			once/discharge/day	grab
Total Suspended Solids	mg/L	100			once/discharge/day	grab
Hardness	mg/L	*			once/discharge/day	grab
Lead, Dissolved	µg/L	104			once/discharge/day	grab
Zinc, Dissolved	µg/L	1,623			once/discharge/day	grab
Cadmium, Dissolved	µg/L	68			once/discharge/day	grab
Copper, Dissolved	µg/L	64			once/discharge/day	grab
Trivalent Chromium, Dissolved	mg/L	*			once/discharge/day	grab
Hexavalent Chromium, Dissolved	mg/L	*			once/discharge/day	grab
Total Chromium, Dissolved	µg/L	280			once/discharge/day	grab
Thallium, Total Recoverable	mg/L	*			once/discharge/day	grab
Settleable Solids	ml/L/hr	1.5			once/discharge/day	grab
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<b>B. STANDARD CONDITIONS</b>						
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A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS (continued)

- \* Monitoring requirement only.
- \*\* (Reserved)
- \*\*\* Final limitations and monitoring requirements for Fecal Coliform are applicable only during the recreational season from April 1 through October 31. Sample in June and September.
- \*\*\*\* pH is measured in pH units and is not to be averaged. The pH is limited to the range of 6.0-10.0 pH units.
- \*\*\*\*\* Effluent shall not elevate or depress the temperature of the receiving stream beyond the mixing zone more than five (5°F). The stream temperature beyond the mixing zone shall not exceed eighty-four (84°F) due to the effluent.
- \*\*\*\*\* Sample once per quarter in the months of March, June, September, and December.
- \*\*\*\*\* pH is measured in pH units and is not to be averaged. The pH is limited to the range of 6.0-9.0 pH units.

Note 1 - The effluent shall be dechlorinated and the effluent shall contain no detectable Chlorine Residual. Regular monitoring by the permittee for TRC will not be required unless the Department notifies the permittee.

Note 2 - Samples shall be taken on the same day that samples are taken at Outfall #003, samples must be taken when Big Creek is not being influenced by stormwater runoff.

Note 3 - The final limitations are based on the Water Quality Standards (WQS), 10 CSR 20-7.015. If the site specific WQS study shows higher limits are applicable, and those limits are adopted by the Missouri Clean Water Commission, this permit may be reopened to reflect the site specific numbers.

Note 4 - Compliance Point #004 and Outfall #005 (Parshall Flume) must have flow measuring devices capable of measuring daily flow.

Note 5 - (Reserved)

Note 6 - The monthly upstream and downstream sample will be taken on the same day as Outfalls #003, #004, and #005 are sampled.

C. SPECIAL CONDITIONS

1. This permit may be reopened and modified, or alternatively revoked and reissued, to:
  - (a) Comply with any applicable effluent standard or limitation issued or approved under Sections 301(b) (2) (C) and (D), 304(b) (2), and 307(a) (2) of the Clean Water Act, if the effluent standard or limitation so issued or approved:
    - (1) contains different conditions or is otherwise more stringent than any effluent limitation in the permit; or
    - (2) controls any pollutant not limited in the permit.
  - (b) Incorporate new or modified effluent limitations or other conditions, if the result of a waste load allocation study, toxicity test or other information indicates changes are necessary to assure compliance with Missouri's Water Quality Standards.
  - (c) Incorporate new or modified effluent limitations or other conditions if, as the result of a watershed analysis, a Total Maximum Daily Load (TMDL) limitation is developed for the receiving waters which are currently included in Missouri's list of waters of the state not fully achieving the state's water quality standards, also called the 303(d) list.

The permit as modified or reissued under this paragraph shall also contain any other requirements of the Clean Water Act then applicable.

2. All outfalls must be clearly marked in the field.

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Permit No. MO-0001121

C. SPECIAL CONDITIONS (continued)

3. Permittee will cease discharge by connection to areawide wastewater treatment system within 90 days of notice of its availability.

4. Changes in Discharges of Toxic Substances

The permittee shall notify the Director as soon as it knows or has reason to believe:

(a) That any activity has occurred or will occur which would result in the discharge of any toxic pollutant which is not limited in the permit, if that discharge will exceed the highest of the following "notification levels:"

(1) One hundred micrograms per liter (100 µg/L);

(2) Two hundred micrograms per liter (200 µg/L) for acrolein and acrylonitrile; five hundred micrograms per liter (500 µg/L) for 2,5 dinitrophenol and for 2-methyl-4, 6-dinitrophenol; and one milligram per liter (1 mg/L) for antimony;

(3) Five (5) times the maximum concentration value reported for the pollutant in the permit application;

(4) The level established in Part A of the permit by the Director.

(b) That they have begun or expect to begin to use or manufacture as an intermediate or final product or byproduct any toxic pollutant, which was not reported in the permit application.

5. Report as no-discharge when a discharge does not occur during the report period.

6. General Criteria. The following water quality criteria shall be applicable to all waters of the state at all times including mixing zones. No water contaminant, by itself or in combination with other substances, shall prevent the waters of the state from meeting the following conditions:

(a) Waters shall be free from substances in sufficient amounts to cause the formation of putrescent, unsightly or harmful bottom deposits or prevent full maintenance of beneficial uses;

(b) Waters shall be free from oil, scum and floating debris in sufficient amounts to be unsightly or prevent full maintenance of beneficial uses;

(c) Waters shall be free from substances in sufficient amounts to cause unsightly color or turbidity, offensive odor or prevent full maintenance of beneficial uses;

(d) Waters shall be free from substances or conditions in sufficient amounts to result in toxicity to human, animal or aquatic life;

(e) There shall be no significant human health hazard from incidental contact with the water;

(f) There shall be no acute toxicity to livestock or wildlife watering;

(g) Waters shall be free from physical, chemical or hydrologic changes that would impair the natural biological community;

(h) Waters shall be free from used tires, car bodies, appliances, demolition debris, used vehicles or equipment and solid waste as defined in Missouri's Solid Waste Law, section 260.200, RSMo, except as the use of such materials is specifically permitted pursuant to section 260.200-260.247.

7. Sludge and Biosolids Use For Domestic Wastewater Treatment Facilities

(a) Permittee shall comply with the pollutant limitations, monitoring, reporting, and other requirements in accordance with the attached permit Standard Conditions.

(b) If sludge is not removed by a contract hauler, permittee is authorized to land apply biosolids. Permit Standard Conditions, Part III shall apply to the land application of biosolids. Permittee shall notify the department at least 180 days prior to the planned removal of biosolids. The department may require

submittal of a biosolids management plan for department review and approval as determined appropriate on a case-by-case basis.

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Permit No. MO-0001121

C. SPECIAL CONDITIONS (continued)

8. If the permittee does not discharge effluent from Outfall #001 and instead pumps that effluent to the stormwater basin for further treatment to remove metals, the permittee must test for Biochemical Oxygen Demand, and Fecal Coliform prior to commingling this effluent with the stormwater. The limits for Biochemical Oxygen Demand, and Fecal Coliform shall be the same as for the effluent had it been discharged for Outfall #001. This data must be reported with the discharge monitoring reports for Outfall #002. The permittee may then report no discharge from Outfall #001 if none has occurred from Outfall #001 during the month.

9. Any sludge removed shall be processed through the smelting process, or the Missouri Department of Natural Resources shall be contacted for approval of the alternate disposal proposal.

10. A Quality assurance/Quality control (QA/QC) plan shall be maintained for samples analyzed by the permittee, and QA/QC plans submitted for any other laboratories which will be used to fulfill monitoring requirements.

11. By January 31<sup>st</sup> of each year starting in 1999, Doe Run shall submit a report to the Southeast Regional office, the Water Pollution Control Program (WPCP) - Central Office, and United States Environmental Protection Agency (EPA) Region VII that reports in tabular form the data from the upstream monitoring point, water quality monitoring point #004, Outfall #005, and the downstream monitoring point, from the previous year or partial year.

The report shall compare the data with the appropriate water quality standards for each of the above monitoring points and shall indicate whether the standard was met or exceeded. The data from each of the above points shall include concentration of pollutants, flow, and mass of pollutants in pounds per day.

The report is due January 31<sup>st</sup> of each year.

12. If monitoring data indicates that water quality standards are being exceeded at water quality monitoring point #004, Outfall #005, or the downstream monitoring point, this permit may be reopened and modified to establish limits to protect water quality at any of the above points.

13. Whole Effluent Toxicity (WET) tests shall be conducted as follows:

SUMMARY OF WET TESTING FOR THIS PERMIT				
OUTFALL	A.E.C. %	FREQUENCY	SAMPLE TYPE	MONTH
#003	100%	Annually	24 hr. composite or grab	October

(a) Test Schedule and Follow-Up Requirements

- (1) Perform a single-dilution test in the months and at the frequency specified above. If the effluent passes the test, do not repeat the test until the next test period.

Submit test results along with complete copies of the test reports as received from the laboratory within 30 calendar days of availability to the WPCP, Water Quality Section, P.O. Box 176, Jefferson City, MO 65102.

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C. SPECIAL CONDITIONS (continued)

13. Whole Effluent Toxicity (WET) (continued)

(a) Test Schedule and Follow-Up Requirements (continued)

- (2) If the effluent fails the test, a multiple dilution test shall be performed within 30 calendar days, and biweekly thereafter, until one of the following conditions are met:
  - (a) THREE CONSECUTIVE MULTIPLE-DILUTION TESTS PASS. No further tests need to be performed until next regularly scheduled test period.
  - (b) A TOTAL OF THREE MULTIPLE-DILUTION TESTS FAIL.
- (3) The permittee shall submit a summary of all test results for the test series along with complete copies of the test reports as received from the laboratory to the WPCP, Planning Section, P.O. Box 176, Jefferson City, MO 65102 within 14 calendar days of the third failed test.
- (4) Additionally, the following shall apply upon failure of the third test: A toxicity identification evaluation (TIE) or toxicity reduction evaluation (TRE) is automatically triggered. The permittee shall contact WPCP, Planning Section to ascertain as to whether a TIE or TRE is appropriate. The permittee shall submit a plan for conducting a TIE or TRE to the Planning Section of the WPCP within 60 calendar days of the date of DNR's direction to perform either a TIE or TRE. This plan must be approved by DNR before the TIE or TRE is begun. A schedule for completing the TIE or TRE shall be established in the plan approval.
- (5) Upon DNR's approval, the TIE/TRE schedule may be modified if toxicity is intermittent during the TIE/TRE investigations. A revised WET test schedule may be established by DNR for this period.
- (6) If a previously completed TIE has clearly identified the cause of toxicity, additional TIEs will not be required as long as effluent characteristics remain essentially unchanged and the permittee is proceeding according to a DNR approved schedule to complete a TRE and reduce toxicity. Regularly scheduled WET testing as required in the permit, without the follow-up requirements, will be required during this period.
- (7) All failing test results shall be reported to WPCP, Planning Section, P.O. Box 176, Jefferson City, MO 65102 within 14 calendar days of the availability of the results.
- (8) When WET test sampling is required to run over one DMR period, each DMR report shall contain information generated during the reporting period.
- (9) Submit a concise summary of all test results with the annual report.

(b) PASS/FAIL procedure and effluent limitations:

- (1) To pass a single-dilution test, mortality observed in the AEC test concentration shall not be significantly different (at the 95% confidence level;  $p = 0.05$ ) than that observed in the upstream receiving-water control sample. The appropriate statistical tests of significance will be those

outlined in the most current USEPA acute toxicity manual or those specified by the MDNR.

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C. SPECIAL CONDITIONS (continued)

13. Whole Effluent Toxicity (WET) (continued)

(b) PASS/FAIL procedure and effluent limitations (continued)

(2) To pass a multiple-dilution test:

- (a) the computed percent effluent at the edge of the zone of initial dilution, Acceptable Effluent Concentration (AEC), must be less than three-tenths (0.3) of the LC<sub>50</sub> concentration for the most sensitive of the test organisms; or,
  - (b) all dilutions equal to or greater than the AEC must be nontoxic.
- Failure of one multiple-dilution test is an effluent limit violation.

(c) Test Conditions

- (1) Test Type: Acute Static non-renewal
- (2) Test species: Ceriodaphnia dubia and Pimephales promelas (fathead minnow). Organisms used in WET testing shall come from cultures reared for the purpose of conducting toxicity tests and cultured in a manner consistent with the most current USEPA guidelines. All test animals shall be cultured as described in the most current edition of Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms.
- (3) Test period: 48 hours at the "Acceptable Effluent Concentration" (AEC) specified above.
- (4) When dilutions are required, upstream receiving stream water shall be used as dilution water. If upstream water is unavailable or if mortality in the upstream water exceeds 10%, "reconstituted" water will be used as dilution water. Procedures for generating reconstituted water will be supplied by the MDNR upon request.
- (5) Single-dilution tests will be run with:
  - (a) Effluent at the AEC concentration;
  - (b) 100% receiving-stream water (if available), collected upstream of the outfall at a point beyond any influence of the effluent; and
  - (c) reconstituted water.
- (6) Multiple-dilution tests will be run with:
  - (a) 100%, 50%, 25%, 12.5%, and 6.25% effluent, unless the AEC is less than 25% effluent, in which case dilutions will be 4 times the AEC, two times the AEC, AEC, 1/2 AEC and 1/4 AEC;
  - (b) 100% receiving-stream water (if available), collected upstream of the outfall at a point beyond any influence of the effluent; and
  - (c) reconstituted water.
- (7) If reconstituted-water control mortality for a test species exceeds 10%, the entire test will be rerun.

**SUMMARY OF TEST METHODOLOGY FOR WHOLE-EFFLUENT TOXICITY TESTS**

Whole-effluent-toxicity test required in NPDES permits shall use the following test conditions when performing single or multiple dilution methods. Any future changes in methodology will be supplied to the permittee by the Missouri Department of Natural Resources (MDNR). Unless more stringent methods are specified by the DNR, the procedures shall be consistent with the most current edition of Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms,

Test conditions for Ceriodaphnia dubia:

Test duration: 48 h  
Temperature:  $25 \pm 1^\circ\text{C}$  Temperatures shall not deviate by more than  $3^\circ\text{C}$  during the test.  
Light Quality: Ambient laboratory illumination  
Photoperiod: 16 h light, 8 h dark  
Size of test vessel: 30 mL (minimum)  
Volume of test solution: 15 mL (minimum)  
Age of test organisms: <24 h old  
No. of animals/test vessel: 5  
No. of replicates/concentration: 4  
No. of organisms/concentration: 20 (minimum)  
Feeding regime: None (feed prior to test)  
Aeration: None  
Dilution water: Upstream receiving water; if no upstream flow, synthetic water modified to reflect effluent hardness.  
Endpoint: Pass/Fail (Statistically significant Mortality when compared to upstream receiving water control or synthetic control if upstream water was not available at  $p \leq 0.05$ )  
Test acceptability criterion: 90% or greater survival in controls

Test conditions for (Pimephales promelas):

Test duration: 48 h  
Temperature:  $25 \pm 1^\circ\text{C}$  Temperatures shall not deviate by more than  $3^\circ\text{C}$  during the test.  
Light Quality: Ambient laboratory illumination  
Photoperiod: 16 h light/ 8 h dark  
Size of test vessel: 250 mL (minimum)  
Volume of test solution: 200 mL (minimum)  
Age of test organisms: 1-14 days (all same age)  
No. of animals/test vessel: 10  
No. of replicates/concentration: 4 (minimum) single dilution method  
2 (minimum) multiple dilution method  
No. of organisms/concentration: 40 (minimum) single dilution method  
20 (minimum) multiple dilution method  
Feeding regime: None (feed prior to test)  
Aeration: None, unless DO concentration falls below 4.0 mg/L; rate should not exceed 100 bubbles/min.  
Dilution water: Upstream receiving water; if no upstream flow, synthetic water modified to reflect effluent hardness.  
Endpoint: Pass/Fail (Statistically significant Mortality when compared to upstream receiving water control or synthetic control if upstream water was not available at  $p \leq 0.05$ )  
Test Acceptability criterion: 90% or greater survival in controls



Date of Fact Sheet: July 8, 2004

Date of Public Notice: July 30, 2004

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) PERMIT  
FACT SHEET

This Fact Sheet explains the applicable regulations, rationale for development of this permit and the public participation process.

NPDES PERMIT NUMBER: MO-0001121

FACILITY NAME: Doe Run, Glover Smelter

OWNER NAME: The Doe Run Company

LOCATION: Sec. 11, T32N, R3E, Iron County

RECEIVING STREAM: Scroggins Branch

FACILITY CONTACT PERSON: Aaron Miller

TELEPHONE: (573) 546-7492

This permit will be issued for a period of five years.

FACT SHEET  
DOE RUN/GLOVER SMELTER  
MO-0001121  
IRON COUNTY, MISSOURI

On May 19, 2003, ASARCO, Inc., Missouri Lead Division, Glover Unit, Route 1, Box 60, Annapolis, Missouri 63620, applied for a renewal of permit MO-0001121, the company's wastewater discharge permit, which is to expire on November 5, 2003. The Standard Industrial Classification (SIC) code for the facility is 3332.

TECHNOLOGY BASED EFFLUENT LIMITATIONS

Regulations promulgated at 40 CFR §122.44(a) require technology based effluent limitations to be placed in NPDES permits based on national effluent limitations guidelines and standards, Best Professional Judgement (BPJ), or a combination of the two. Discharges from Outfalls #001 and #003 are subject to effluent limitations given in 40 CFR Part 421 nonferrous metals guidelines. All three outfalls are also subject to the water quality standards contained in State of Missouri effluent 10 CSR 20 chapter 7.

BUILDING BLOCK METHOD OF ESTABLISHING CATEGORICAL LIMITS

Using this method, a facility receives a discharge allowance for each individual process only if it actually has the capability of operating that process. However, the facility does not have to be discharging wastewater from the process to receive the allowance. The building blocks can include allowances for contaminants from both categorically regulated processes (scope flows) and non-regulated processes (non-scope flows), for facilities which have combined waste streams.

BASIS OF CATEGORICAL MASS LIMITS

Effluent mass limits for lead, zinc, cadmium, and total suspended solids (TSS) are based on the best available technology (BAT) limitations specified in the Primary lead subcategory in 40 CFR § 421.73 (j), and (k); and based on the best practical technology (BPT) limitations specified in the Primary lead subcategory in 40 CFR § 421.72 (j), and (k) where BAT limits have not been specified. These limitations are shown below. Other building block allowances contained in 40 CFR § 421.73 and 40 CFR § 421.72 were not allowed because these processes are not utilized at the ASARCO Glover Smelter. The EPA Final Development Document for Effluent Limitations Guidelines and Standards for the Nonferrous Metals Manufacturing Point Source Category (volumes III & IV) were also used. The allowances from that document are marked by (DD) on the following pages.

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PRIMARY LEAD SUBCATEGORY

(j) Employee hand wash given in (lbs/10<sup>9</sup> lbs of lead bullion produced)

<u>Pollutant</u>	<u>Daily Max.</u>	<u>Monthly Avg.</u>
Lead (BAT)	0.924	0.429
Zinc (BAT)	3.366	1.386
TSS (BPT) *	135.300	64.350
Cadmium (DD) (BAT)	0.660	0.264

\* An allowance was given for TSS in both BPT and in NSPS, but not in the BAT. BCT is to address this issue, however it has not yet been developed, so the BPT allowance is being used.

(k) Respirator wash given in (lbs/10<sup>9</sup> lbs of lead bullion produced)

<u>Pollutant</u>	<u>Daily Max.</u>	<u>Monthly Avg.</u>
Lead (BAT)	1.484	0.689
Zinc (BAT)	5.406	2.226
TSS (BPT) *	217.300	103.400
Cadmium (DD) (BAT)	1.060	0.424

pH within the range of 7.5 to 10.0 at all times.

CATEGORICAL EFFLUENT MASS LIMITATION CALCULATIONS

The effluent mass limitations for cadmium, lead, zinc, and TSS from the process wastewater contribution to Outfall #001, are calculated using the foregoing effluent limits (scope flows). The daily production rate of 0.000713 billion pounds of primary lead bullion given in the application for permit renewal was used as the multiplier. To those mass limits there are added non-scope effluent mass limit allotments.

For Outfall #001, the effect of the flow from employee rest rooms for 185 employees, and showers for 125 employees (OSHA requirement) has been added. Using {10 CSR 20 - 8.020(11)(B)3} design figures of 10 gallons/person/day for employee showers and 15 gallons/person/day for employee rest room usage. For Outfall #003, the effect of the stormwater flow has been added.

First, using the flow of 15 gal/person/day for 185 employees we back calculate from an allowance of 45 mg/L (daily maximum) for domestic waste from the restrooms. Then we back calculate from an allowance of 30 mg/L (monthly average) for domestic waste.

TSS daily maximum Outfall #001  
(2820 gal/day) (45 mg/L) (3.785 1/gal) (2.205x10<sup>-6</sup> lbs/mg) = 1.0591 lbs/day

TSS monthly average Outfall #001  
(2820 gal/day) (30mg/L) (3.785 1/gal) (2.205x10<sup>-6</sup> lbs/mg) = 0.7061 lbs/day

There is also a non-scope effluent mass limit allotment for cadmium, lead, zinc and TSS given for shower water. The flow from the employee showers at 10 gallons/person/day for 125 employees is used in the calculation. Here the allowed concentration values are obtained from Table VII-21, on page 248 of Volume I, of the EPA Final Development Document for Effluent Limitations Guidelines and Standards for the Nonferrous Metals Manufacturing Point Source Category, (non-scope flows) for monthly average and daily maximum for each of the contaminants.

Lead daily maximum Outfall #001  
(1250 gal/day) (0.28 mg/L) (3.785 1/gal) (2.205x10<sup>-6</sup> lbs/mg) = 0.0029 lbs/day

Lead monthly average Outfall #001  
(1250 gal/day) (0.11 mg/L) (3.785 1/gal) (2.205x10<sup>-6</sup> lbs/mg) = 0.0011 lbs/day

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Zinc daily maximum Outfall #001  
(1250 gal/day) (1.02 mg/L) (3.785 1/gal) ( $2.205 \times 10^{-6}$  lbs/mg) = 0.0106 lbs/day

Zinc monthly average Outfall #001  
(1250 gal/day) (0.31 mg/L) (3.785 1/gal) ( $2.205 \times 10^{-6}$  lbs/mg) = 0.0032 lbs/day

Cadmium daily maximum Outfall #001  
(1250 gal/day) (0.20 mg/L) (3.785 1/gal) ( $2.205 \times 10^{-6}$  lbs/mg) = 0.0021 lbs/day

Cadmium monthly average Outfall #001  
(1250 gal/day) (0.08 mg/L) (3.785 1/gal) ( $2.205 \times 10^{-6}$  lbs/mg) = 0.0008 lbs/day

TSS daily maximum Outfall #001  
(1250 gal/day) (15 mg/L) (3.785 1/gal) ( $2.205 \times 10^{-6}$  lbs/mg) = 0.1565 lbs/day

TSS monthly average Outfall #001  
(1250 gal/day) (10 mg/L) (3.785 1/gal) ( $2.205 \times 10^{-6}$  lbs/mg) = 0.104324 lbs/day

The effluent mass limitations for cadmium, lead, zinc and TSS from the process stormwater\*, are calculated using the contaminant values found in Table VII-21. The flow rate used for stormwater runoff was 2.4 million pounds per day. This is based on the treatment plant design flow rate of 200 gallons per minute (0.288 MGD), rather than any specific storm event.

Lead daily maximum Outfall #003  
( $0.288 \times 10^6$  gal/day) (0.28 mg/L) (3.785 1/gal) ( $2.205 \times 10^{-6}$  lbs/mg) = 0.673 lbs/day

Lead monthly average Outfall #003  
( $0.288 \times 10^6$  gal/day) (0.11 mg/L) (3.785 1/gal) ( $2.205 \times 10^{-6}$  lbs/mg) = 0.264 lbs/day

Zinc daily maximum Outfall #003  
( $0.288 \times 10^6$  gal/day) (1.02 mg/L) (3.785 1/gal) ( $2.205 \times 10^{-6}$  lbs/mg) = 2.452 lbs/day

Zinc monthly average Outfall #003  
( $0.288 \times 10^6$  gal/day) (0.31 mg/L) (3.785 1/gal) ( $2.205 \times 10^{-6}$  lbs/mg) = 0.745 lbs/day

Cadmium daily maximum Outfall #003  
( $0.288 \times 10^6$  gal/day) (0.20 mg/L) (3.785 1/gal) ( $2.205 \times 10^{-6}$  lbs/mg) = 0.481 lbs/day

Cadmium monthly average Outfall #003  
( $0.288 \times 10^6$  gal/day) (0.08 mg/L) (3.785 1/gal) ( $2.205 \times 10^{-6}$  lbs/mg) = 0.192 lbs/day

TSS daily maximum Outfall #003  
( $0.288 \times 10^6$  gal/day) (15.0 mg/L) (3.785 1/gal) ( $2.205 \times 10^{-6}$  lbs/mg) = 36.054 lbs/day

TSS monthly average Outfall #003  
( $0.288 \times 10^6$  gal/day) (10.0 mg/L) (3.785 1/gal) ( $2.205 \times 10^{-6}$  lbs/mg) = 24.036 lbs/day

\* The process stormwater defined here does not include the stormwater isolated and collected in the area of the plant regulated under the Missouri Hazardous Waste Law.

**DAILY MAXIMUM**

LEAD (CATEGORICAL ALLOWANCES) Outfall #001

employee hand wash	( $0.000713 \times 10^9$ #)	x	(0.924 #/ $10^9$ #)	=	0.00066 #
respirator wash	( $0.000713 \times 10^9$ #)	x	(1.484 #/ $10^9$ #)	=	0.00106 #
employee showers (from above)				=	0.0029 #
TOTAL				=	0.00462 #

LEAD (NON-SCOPE ALLOWANCES) Outfall #003

storm water runoff (from above) = 0.673 #

**MONTHLY AVERAGE**

LEAD (CATEGORICAL ALLOWANCES) Outfall #001

employee hand wash	(0.000713 x 10 <sup>9</sup> #)	x	(0.429 #/10 <sup>9</sup> #)	=	0.00031 #
respirator wash	(0.000713 x 10 <sup>9</sup> #)	x	(0.689 #/10 <sup>9</sup> #)	=	0.00049 #
employee showers (from above)				=	0.0011 #
TOTAL				=	0.0019 #

LEAD (NON-SCOPE ALLOWANCES) Outfall #003

storm water runoff (from above)	=	0.264 #
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**DAILY MAXIMUM**

ZINC (CATEGORICAL ALLOWANCES) Outfall #001

employee hand wash	(0.000713 x 10 <sup>9</sup> #)	x	(3.366 #/10 <sup>9</sup> #)	=	0.0024 #
respirator wash	(0.000713 x 10 <sup>9</sup> #)	x	(5.406 #/10 <sup>9</sup> #)	=	0.0039 #
employee showers (from above)				=	0.0106 #
TOTAL				=	0.0169 #

ZINC (NON-SCOPE ALLOWANCES) Outfall #003

storm water runoff (from above)	=	2.452 #
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**MONTHLY AVERAGE**

ZINC (CATEGORICAL ALLOWANCES) Outfall #001

employee hand wash	(0.000713 x 10 <sup>9</sup> #)	x	(1.386 #/10 <sup>9</sup> #)	=	0.00099 #
respirator wash	(0.000713 x 10 <sup>9</sup> #)	x	(2.226 #/10 <sup>9</sup> #)	=	0.00159 #
employee showers (from above)				=	0.0032 #
TOTAL				=	0.00578 #

ZINC (NON-SCOPE ALLOWANCES) Outfall #003

storm water runoff (from above)	=	0.745 #
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**DAILY MAXIMUM**

CADMIUM (CATEGORICAL ALLOWANCES) Outfall #001

employee hand wash (DD)	(0.000713 x 10 <sup>9</sup> #)	x	(0.660 #/10 <sup>9</sup> #)	=	0.00047 #
respirator wash (DD)	(0.000713 x 10 <sup>9</sup> #)	x	(1.060 #/10 <sup>9</sup> #)	=	0.00076 #
employee showers (from above)				=	0.0021 #
TOTAL				=	0.00333 #

CADMIUM (NON-SCOPE ALLOWANCES) Outfall #003

storm water runoff (from above)	=	0.481 #
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**MONTHLY AVERAGE**

CADMIUM (CATEGORICAL ALLOWANCES) Outfall #001

employee hand wash (DD)	(0.000713 x 10 <sup>9</sup> #)	x	(0.264 #/10 <sup>9</sup> #)	=	0.000188 #
respirator wash (DD)	(0.000713 x 10 <sup>9</sup> #)	x	(0.424 #/10 <sup>9</sup> #)	=	0.000302 #
employee showers (from above)				=	0.0008 #
TOTAL				=	0.00129 #

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CADMIUM (NON-SCOPE ALLOWANCES) Outfall #003

storm water runoff (from above) = 0.192 #

**DAILY MAXIMUM**

TSS (CATEGORICAL ALLOWANCES) Outfall #001

employee hand wash	(0.000713 x 10 <sup>9</sup> #)	x (135.300 #/10 <sup>9</sup> #)	= 0.096 #
respirator wash (BPT)	(0.000713 x 10 <sup>9</sup> #)	x (217.300 #/10 <sup>9</sup> #)	= 0.155 #
employee rest room (from above)			= 1.059 #
employee showers (from above)			= 0.1565 #
<u>TOTAL</u>			= 1.4665 #

TSS (NON-SCOPE ALLOWANCES) Outfall #003

storm water runoff (from above) = 36.056 #

**MONTHLY AVERAGE**

TSS (CATEGORICAL ALLOWANCES) Outfall #001

employee hand wash	(0.000713 x 10 <sup>9</sup> #)	x (64.350 #/10 <sup>9</sup> #)	= 0.046 #
respirator wash (BPT)	(0.000713 x 10 <sup>9</sup> #)	x (103.400 #/10 <sup>9</sup> #)	= 0.074 #
employee rest room (from above)			= 0.7061 #
employee showers (from above)			= 0.1043 #
<u>TOTAL</u>			= 0.9304 #

TSS (NON-SCOPE ALLOWANCES) Outfall #003

storm water runoff (from above) = 24.036 #

The pH must be maintained within the range of 7.5 to 10.0 at all times at both outfalls.

MISSOURI REGULATIONS

Missouri's Water Quality Standards, 10 CSR 20-7.031, define the state's water quality objectives in terms of water uses to be maintained and criteria to protect those uses. The classified streams in the state are listed by name in the standards, and specific use designations are indicated. This facility discharges into Scroggins Branch which flows into Big Creek which is classified for irrigation, livestock and wildlife watering, aquatic life protection, cool water fishery, whole body contact, and boating. Discharges to classified streams have to be in compliance with the general and specific criteria contained in 10 CSR 20-7.031(3) and (4). The water quality limits which are calculated below are based on acute criteria for a limited warm-water fishery (LWWF) for Scroggins Branch, or chronic limits for a general warm-water fishery (GWWF) in Big Creek beyond the mixing zone, whichever is more stringent. However, if the concentration back calculated from the mass categorical limit is more stringent, that value is used.

Since Big Creek and the St. Francois River drain noncarbonate terrain which results in softer waters, (data from the St. Francois River confirms water averaging less than 125 mg/L of total hardness) metals criteria for the lowest hardness range (<125 mg/L) are appropriate as criteria. Estimated upstream background levels are subtracted from the in-stream criterion. The background for lead concentration is an estimate from nearby streams while other metals are Ozark-wide average concentrations. This would yield the following stream specific limits for Big Creek:

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(In-stream chronic criterion - background) =

Pb--(0.012 - .004) x 2*	= 0.016 mg/L
Cd--(0.010 - .002)	= 0.008 mg/L
Cu--(0.02 - 0.005) x 1.4*	= 0.021 mg/L
Zn--(0.245 - .04)	= 0.205 mg/L
Tl--(0.0063 - 0)	= 0.0063 mg/L

- \* adjustment for "total recoverable : dissolved" metals ratio were based on the following: since dissolved metals are now specified as the toxic fraction in the Water Quality Standards, discharge limits must be expressed as "total recoverable" (TR) metals. If a consistent relationship between in-stream dissolved (D) and TR metals could be established, it has been suggested that a value higher than the wasteload allocation limit could be used as a discharge permit limit, assuming that only a fraction of the TR would be in the D form in-stream. The relationship of TR to D for water years 85-89 was examined for Big Creek at Chloride, about 1.5 miles below Glover.

CALCULATION OF WATER QUALITY BASED LIMITS

Outfall #001 - The small sanitary flow will be diluted at least 8 times in the mixing zone (50% of the stream) even at low stream flow, and therefore will not cause exceedence of dissolved-oxygen or ammonia criteria; therefore, secondary limits for BOD and NFR (TSS) are satisfactory. Disinfection is required as per the 10 CSR 20-7.015 regulations.

Dechlorination is required because the 7Q10 low-stream flow-to-effluent-flow ratio is less than 50:1 Metals' limits should be limited for protection against: first, acute toxicity in Scroggins Branch (aquatic life has been noted in this branch above ASARCO) and second, chronic toxicity in Big Creek beyond a mixing zone. Thallium and Copper were added to Outfall #001 because of the analyzed value of each, that was reported on the permit application.

0.6 cubic feet per second (cfs) x 50% mixing zone = 0.3 cfs (0.3 cfs + .038 cfs) / .038 cfs = 8.9 times dilution in the mixing zone in Big Creek

Stream specific criteria x 8.9 = water quality chronic limit

Cd -----	(0.0080 mg/L) x 8.9 = 0.070 mg/L
Pb -----	(0.0160 mg/L) x 8.9 = 0.140 mg/L
<u>Tl -----</u>	<u>(0.0063 mg/L) x 8.9 = 0.056 mg/L</u>
Cu -----	(0.0210 mg/L) x 8.9 = 0.187 mg/L
Zn -----	(0.2050 mg/L) x 8.9 = 1.824 mg/L

Cd = 0.046 mg/L acute-criteria LWFF is more stringent

Pb = 0.080 mg/L acute-criteria is more stringent

Zn = 1.180 mg/L acute-criteria LWFF is more stringent

Cu = 0.046 mg/L acute-criteria LWFF is more stringent

The above underlined values are expressed as "total recoverable" metals and used as daily maxima and monthly average.

Outfall #002 - Since Big Creek is designated as "cool-water fishery" the stream temperature should not exceed 84 degrees F, or be raised more than 5 degrees F above ambient temperature. The temperature of the effluent from Outfall #002 and Big Creek immediately above the mouth of Scroggins Branch shall be monitored. The temperature at the water-quality compliance point Outfall #004 shall not be more than 5 degrees F above the temperature immediately above Scroggins Branch, and shall not exceed 84 degrees F.

0.6 cfs x 50% mixing zone = 0.3 cfs

(0.3 cfs + .24 cfs) / .24 cfs = 2.25 times dilution in the mixing zone in Big Creek

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Stream specific criteria x 2.25 = water quality chronic limit

Pb ----- (0.0160 mg/L) x 2.25 = 0.036 mg/L

Cu ----- (0.0210 mg/L) x 2.25 = 0.047 mg/L

Cd ----- (0.0080 mg/L) x 2.25 = 0.018 mg/L

Zn ----- (0.2050 mg/L) x 2.25 = 0.460 mg/L

Cu = 0.046 mg/L acute-criteria LWWF is more stringent

The above underlined values are expressed as "total recoverable" metals and are used as daily maxima and monthly average.

Outfall #003 - Water quality limits for metals for this outfall are drafted with variable limits based on stream flow. This is acceptable only if an accurate flow-measurement device is in use in Big Creek to determine flows. The formula used to determine water quality limits is as follows for four different stream flow conditions:

Effluent concentration = (stream specific limit) x {(stream flow in cfs x 50%) + .445 cfs} / .445 cfs Where (NA) appears, below, the chronic water quality limit is not applicable since the limiting factor is acute water quality limit.

<u>FOR LEAD STREAM FLOW</u>	<u>CALCULATION</u>	<u>LIMIT</u>
<u>&gt; 8 cfs</u>	0.016 x {(8 x 0.5) + 0.445} / 0.445 = 0.160 mg/L	(NA)
<u>&lt; 8 cfs</u>	0.016 x {(0.6 x 0.5) + 0.445} / 0.445 = <u>0.027 mg/L</u>	

Pb = 0.080 mg/L acute-criteria is more stringent

\*\*\*\*\*

<u>FOR ZINC STREAM FLOW</u>	<u>CALCULATION</u>	<u>LIMIT</u>
<u>&gt; 8 cfs</u>	0.205 x {(8 x 0.5) + 0.445} / 0.445 = 2.05 mg/L	(NA)
<u>&lt; 8 cfs</u>	0.205 x {(0.6 x 0.5) + 0.445} / 0.445 = <u>0.34 mg/L</u>	

\*\*\*\*\*

<u>FOR CADMIUM STREAM FLOW</u>	<u>CALCULATION</u>	<u>LIMIT</u>
<u>&gt; 8 cfs</u>	0.008 x {(8 x 0.5) + 0.445} / 0.445 = 0.080 mg/L	(NA)
<u>&lt; 8 cfs</u>	0.008 x {(0.6 x 0.5) + 0.445} / 0.445 = <u>0.013 mg/L</u>	

Cd = 0.046 mg/L acute-criteria LWWF is more stringent

<u>FOR THALLIUM STREAM FLOW</u>	<u>CALCULATION</u>	<u>LIMIT</u>
<u>&gt; 8 cfs</u>	0.0063 x {(8 x 0.5) + 0.445} / 0.445 = 0.063 mg/L	(NA)
<u>&lt; 8 cfs</u>	0.0063 x {(0.6 x 0.5) + 0.445} / 0.445 = <u>0.011 mg/L</u>	

The above underlined values are expressed as "total recoverable" metals and are used as daily maxima and monthly average.

In-stream Monitoring point #004

The in-stream monitoring point is beyond an allowable ¼ mile mixing zone (below Scroggins Branch), and therefore "chronic" aquatic-life criteria are appropriate. Since Big Creek and the St. Francois River drain noncarbonated terrain which results in "softer" waters, and data from the St. Francois River indicates water averaging less than 125 mg/L of total hardness, metals criteria for the lowest hardness range (<125 mg/L) are appropriate as criteria. Stream hardness data submitted by ASARCO in the past also suggests hardness averaging less than 125 mg/L.

"Dissolved" metals are to be monitored at the in-stream monitoring point. "Dissolved" metals are now specified as the toxic form of metals in the Water Quality Standards which became effective March 1991. Results consistently exceeding any of the following may indicate toxic conditions.

Cd--.01 mg/L	Zn--.245 mg/L
Pb--.012 mg/L	Tl--.0063 mg/L



ANTI-BACKSLIDING

40 CFR § 122.44(1) Reissued permits. (1) Except as provided in paragraph (1)(2) of this section when a permit is renewed or reissued, interim effluent limitations, standards or conditions in the previous permit (unless the circumstances on which the previous permit was based have materially and substantially changed since the time the permit was issued and would constitute cause for permit modification or revocation and reissuance under § 122.62).

OTHER SPECIAL CONDITIONS

The special conditions are attached to the draft permit to explain, in detail, the expectations placed upon the permittee for the operation, monitoring and reporting of the wastewater handling activities at the permitted facility.

STANDARD CONDITIONS

The standard conditions attached to the draft permit are applied to all NPDES permittees. They reflect requirements of the federal (40 CFR Part 122) and state (10 CSR 20-Chapter 6) regulations with respect to permittee duties, responsibilities, and liabilities.

PERMIT ISSUANCE ADMINISTRATIVE PROCEDURES

A copy of the public notice and this fact sheet are being forwarded to the applicant, the District Engineer of the U.S. Army Corps of Engineers, the Environmental Protection Agency, the U.S. Fish and Wildlife Service, the United States Forest Service, and the MO Department of Conservation, and the first downstream landowner. Other interested individuals may obtain a copy by writing the address listed below for comment letters.

The proposed determinations of the draft permit are tentative pending the public notice process. Persons wishing to comment on or object to the proposed determinations are invited to submit them in writing to: Department of Natural Resources, Division of Environmental Quality, P.O. Box 176, Jefferson City, Missouri 65102, ATTN: Philip A. Schroeder, Permits Section Chief, Water Pollution Control Program. Please indicate the application number of the draft permit in all comment letters.

The comment period opens July 30, 2004 and all comments received before September 1, 2004 will be considered when making the final determinations regarding the application. If response to the public notice indicates significant public interest, a public hearing may be held in accordance with 10 CSR 20-6.020.

Copies of all draft permits, comments, and other information regarding the permits are available for inspection and copying on the second floor of the Jefferson State Office Building in Jefferson City, Missouri by appointment.

PUBLIC PARTICIPATION

Public comments on the proposed permit are being requested in accordance with Public Participation regulation under 10 CSR 20-6.020.

A copy of the public notice and this fact sheet are being forwarded to the applicant, the District Engineer of the U.S. Army Corps of Engineers, the U.S. Fish and Wildlife Service, the Environmental Protection Agency and the Missouri Department of Conservation.

Other interested individuals may obtain a copy on request by writing to the address listed below for comment letters.

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Comments should be confined to the issues relating to the proposed action and permit and their effect on water quality. The Missouri Department of Natural Resources may not consider comments or objections to a permit based on questions of zoning, location, or other non-water quality issues. See, Curd v. MO Clean Water Commission, 586 S.W. 2d 58 (Mo. App. 1979).

The proposed determinations of the draft permit are tentative pending the public notice process.

Persons wishing to comment upon or object to the proposed determinations are invited to submit them in writing to the Department of Natural Resources, Water Protection Program, P.O. Box 176, Jefferson City, Missouri 65102, ATTN: Peter Goode, Professional Engineer. Please include the permit number of the draft permit in all comment letters.

Within 30 days from the public notice date, as listed on page one, all water quality comments received will be considered in the formulation of all final determinations regarding this application. If response to the public notice indicates significant public interest, a public hearing may be held after due notice. Public hearing and/or issuance of the NPDES permit will be processed according to 10 CSR 20-6.020.

Copies of all draft permits, comments and other information are available for inspection and copying at the Department of Natural Resources, Water Protection Program, P.O. Box 176, 205 Jefferson Street, Jefferson City, MO 65102.

#### PERMIT REGULATIONS

The Federal Water Pollution Control Act ("Clean Water Act" Section 402 Public Law 92-500 as amended) established the National Pollutant Discharge Elimination System (NPDES) permit program. This program regulates the discharge of pollutants from point sources into the waters of the United States. All such discharges are unlawful without a permit (Section 301 of the "Clean Water Act"). After a permit is obtained, a discharge not in compliance with all permit terms and conditions is unlawful. NPDES permits in Missouri are issued by the Director of the Department of Natural Resources under an approved NPDES program, operating in accordance with federal and state laws (Federal "Clean Water Act" and "Missouri Clean Water Law" Section 644 as amended).

#### WATER QUALITY STANDARDS

10 CSR 20-7.031 Missouri Water Quality Standards, Missouri Department of Natural Resources (the Department) "defines the Clean Water Commission's water quality objectives in terms of water uses to be maintained and the criteria to protect those uses".

#### EFFLUENT LIMITATIONS

In order to protect these beneficial uses and the water quality of surface waters and groundwater, effluent limitations are being established under federal and state laws. The monitoring requirements for all parameters have been established by the Department in compliance with 10 CSR 20-7.015 Effluent Regulation.

The current Department effluent regulations 10 CSR 20-7.015 states that non-domestic waste discharges "shall meet the applicable control technology currently effective or that which will become effective during the life of the permit. Where this definition is not available or applicable the Department shall set specific parameter limitations using best engineering judgment as defined in 402(a)(1) of the Federal Clean Water Act".

#### STANDARD CONDITIONS

The standard conditions attached to the draft permit are applied to all NPDES permittees. They reflect requirements of federal (40 CFR 122) and state law (10 CSR 20-Chapter 6) with respect to NPDES permittee duties, responsibilities and liabilities.



Missouri Department of Natural Resources  
Water Pollution Control Program  
Planning Section

Water Quality Review Sheet  
Determination of Stormwater Limits

Facility Information

FACILITY NAME: Doe Run-Glover Smelter NPDES/SOP #: N/A

FACILITY TYPE/DESCRIPTION: Lead Smelter; Slag Pile, Borrow Pits

ECOREGION: Ozark Highlands 8- DIGIT HUC: 08020202 COUNTY: Iron  
Central Irregular Plains Osage Plains  
Mississippi Alluvial Plains Ozark Highlands

LEGAL DESCRIPTION: NW1/4, Sec. 11, T32N, R3E LATITUDE/LONGITUDE: 37,28,54.9 /-90,41,26.9

WATER QUALITY HISTORY: None. These stormwater outfalls have not been permitted in the past independent of NPDES# MO-0001121.

Outfall Characteristics

OUTFALL	DESIGN FLOW (CFS)	TREATMENT TYPE	MAIN CONTAMINANT OF CONCERN
001	0.004	Sanitary WWTP	U
002	0.46	Cooling Water	U
003	0.43	Industrial WWTP	
004		Water Quality Monitoring Point	
005		Water Quality Monitoring Point	
006	0 MGD	Emergency overflow of Outfall #003 impoundment	U

Receiving Waterbody Information

WATERBODY	CLASS	7Q10 (CFS)	*DESIGNATED USES	OTHER CHARACTERISTICS
Scoggins Branch	U	0	None	
Big Creek	P	0.6	CLF,AQL,LWW	See Note 1

\*Cool Water Fishery (CLF), Cold Water Fishery (CDF), Irrigation (IRR), Industrial (IND), Boating & Canoeing (BTG), Drinking Water Supply (DWS), Whole Body Contact Recreation (WBC), Protection of Warmwater Aquatic Life and Human Health (AQL), Livestock & Wildlife Watering (LWW)

Permit Limits And Information

TMDL WATERSHED: ☐ N ☐ W.L.A. STUDY CONDUCTED: ☐ N ☐ DISINFECTION REQUIRED: ☐ Y ☐ DISINFECTION WAIVER: ☐ N  
(Y OR N) (Y OR N) (Y OR N) (Y, N, NA)

OUTFALL #001

WET TEST (Y OR N): ☐ N FREQUENCY: N/A A.E.C. N/A LIMIT: N/A

PARAMETER	DAILY MAXIMUM	WEEKLY AVERAGE	MONTHLY AVERAGE
Flow, MGD			monitor
Total Residual Chlorine, mg/L	0.019		0.019
Total Suspended Solids, lb/day	1.467		0.930
Total Suspended Solids, mg/L		45	30
Lead, Total Recoverable, lb/day	0.0046		0.0019
Lead, Total Recoverable, µg/L	80		80
Zinc, Total Recoverable, lb/day	0.0169		0.00578
Zinc, Total Recoverable, µg/L	1,180		1,180
Cadmium, Total Recoverable, lb/day	0.0033		0.0013
Cadmium, Total Recoverable, µg/l	46		46

Biochemical Oxygen Demand, mg/L		45	30
pH - Units, SU	6-10		6-10
Fecal Coliform, #/100mL	1,000		400
Copper, Total Recoverable, µg/l	46		46
Thallium, Total Recoverable, µg/l	56		56
Hardness, mg/L	Monitor		monitor

\*See Note 2

### OUTFALL #002

WET TEST (Y OR N) : ☐ N FREQUENCY: ANNUALLY A.E.C. 100% LIMIT: NO SIGNIFICANT MORTALITY

PARAMETER	DAILY MAXIMUM	WEEKLY AVERAGE	MONTHLY AVERAGE
Flow, MGD	x		x
Total Residual Chlorine, mg/L	X		x
Lead, Total Recoverable, µg/L	36		80
Copper, Total Recoverable, µg/l	46		46
Cadmium, Total Recoverable, µg/l	18		46
Zinc, Total Recoverable, µg/L	460		1,180
Temperature, °F	Not > ± 5°		
pH - Units, SU	6-10		6-10
Thallium, Total Recoverable, µg/l	56		56

\*See Notes 3 & 7

### OUTFALL #003

WET TEST (Y OR N) : ☐ Y FREQUENCY: ANNUALLY A.E.C. 100% LIMIT: N/A

PARAMETER	DAILY MAXIMUM	MONTHLY AVERAGE
Flow, MGD		
> 8 cfs, Lead, Total Recoverable, lb/day	0.08	0.08
≤ 8 cfs, Lead, Total Recoverable, µg/L	0.027	0.027
> 8 cfs,Zinc, Total Recoverable, lb/day	2.05	2.05
≤ 8 cfs,Zinc, Total Recoverable, µg/L	0.34	0.34
> 8 cfs,Cadmium, Total Recoverable, lb/day	0.46	0.46
< 8 cfs,Cadmium, Total Recoverable, µg/l	0.13	0.13
< 8 cfs,Thallium, Total Recoverable, µg/l	0.176	0.176
> 8 cfs,Thallium, Total Recoverable, µg/l	0.011	0.011
Total Suspended Solids, mg/L	x	x

\*See Notes 4 & 7

### OUTFALL #006

WET TEST (Y OR N) : ☐ N FREQUENCY: N/A A.E.C. N/A LIMIT: N/A

PARAMETER	ACUTE VALUE DAILY MAX/MIN	CHRONIC VALUE (>4 DAY AVERAGE)	MONITORING FREQUENCY	MONTHLY AVERAGE
Flow, MGD	Monitor only	Monitor only	1/event	24 hr estimate
pH - Units, SU	6.5-9.0	45	1/event	grab
Total Suspended Solids, mg/L	100	80	1/event	grab
Hardness, mg/L	Monitor only	Monitor only	1/event	grab
Lead, Dissolved, µg/L	104		1/event	grab
Zinc, Dissolved, µg/L	1,623		1/event	grab
Cadmium, Dissolved, µg/L	68		1/event	grab
Copper, Dissolved, µg/L	64		1/event	grab
Trivalent Chromium, Dissolved, mg/L	Monitor only	Monitor only	1/event	grab
Hexavalent Chromium, Dissolved, mg/L	Monitor only	Monitor only	1/event	grab
Total Chromium, Dissolved, µg/L	280		1/event	grab
Thallium, Total Recoverable, µg/L	Monitor only	Monitor only	1/event	grab
Settleable Solids, ml/L/hr	1.5	1.0	1/event	grab

**Note 1**

7Q10 Stream Low Flow - Estimated 0.6 cfs. The nearest downstream gaging station is at Des Arc, which has a 7Q10 of 4.5 cfs and a drainage area of 99 square miles. At Glover, the basin area is about 15 square miles; therefore, only about 1/7 of the Des Arc flow is assumed:  $4.5 \times (1/7) = 0.6$  cfs. This value is substantiated by a measured 0.6 cfs flow near Glover in 1988.

**Note 2**

Outfall #001 - The small sanitary flow will be diluted at least 8 times in the mixing zone (50% of the stream) even at low stream flow, and therefore will not cause exceedence of dissolved-oxygen or ammonia criteria; therefore, secondary limits for BOD and NFR are satisfactory. Disinfection is required as per the 10 CSR 20-7.015 regulations. Dechlorination is required because the 7Q10 low-stream flow-to-effluent-flow ratio is less than 50:1

Metals' limits should be limited for protection against:

- (1) acute toxicity in Scroggins Branch (aquatic life has been noted in this branch above ASARCO)
- (2) chronic toxicity in Big Creek beyond a mixing zone.

The following limits are based on acute criteria for a limited arm-water fishery for Scroggins Branch, or chronic limits for a general war-water fishery in Big Creek beyond the mixing zone (whichever is more stringent). Water hardness in the <125 mg/L range is assumed. Estimated upstream background levels are subtracted; the background lead concentration is an estimate from nearby streams; other metals are Ozark-wide average concentrations.

$0.6 \text{ cfs} \times 50\% \text{ mixing zone} = 0.3 \text{ cfs}$  ( $0.3 \text{ cfs} + .038 \text{ cfs}$ ) /  $.038 \text{ cfs} = 8.9$  times dilution in the mixing zone in Big Creek

Cd ----- (0.01 mg/L - .002)  $\times 8.9 = 0.07 \text{ mg/L}$

Pb ----- (0.012 mg/L - .004)  $\times 8.9 = 0.14 \text{ mg/L}$

Zn ----- (1.18 mg/L) acute-criteria-limited; no dilution assumed

The above underlined values should be used as daily maxima and expressed as "total recoverable" metals.

**Note 3**

Outfall #002 - Big Creek is a "cool-water fishery" and therefore the stream temperature should not exceed 84 °F, or be raised more than 5 °F above ambient temperature. The temperature shall be monitored in the effluent, and also at the water-quality compliance point Outfall #004 and immediately above Scroggins Branch. The temperature at Outfall #004 shall not be more than 5 °F above the upstream point, and shall not exceed 84 °F.

Metals should be limited as follows (daily maxima; "total recoverable" metals):

$(.24 \text{ cfs} + .3 \text{ cfs}) / .24 \text{ cfs} = 2.25$  times dilution in the mixing zone.

Pb ----- (0.012 - .004 mg/L)  $\times 2.25 \times 2^* = \underline{0.036 \text{ mg/L}}$

Cu ----- (0.02 - .005 mg/L)  $\times 2.25 \times 1.4^* = \underline{0.047 \text{ mg/L}}$

Cd ----- (0.01 - .002 mg/L)  $\times 2.25 = \underline{0.018 \text{ mg/L}}$

Zn ----- (0.245 - .040 mg/L)  $\times 2.25 = \underline{0.46 \text{ mg/L}}$

Dechlorination is required if chlorine is used.

**Note 4**

Outfall #003 - The BAT (daily maximum) limit for Cd of 0.4748 lbs/day will meet in-stream criteria only if there is at least 24 cfs in Big Creek:

$0.4748 \text{ lb/day} / (5.4 \times .445 \text{ cfs}) = .197 \text{ mg/L}$

$.197 \text{ mg/L} / (.01 \text{ mg/L} - .002 \text{ mg/L}) = 24$  times dilution needed in the mixing zone

$24 \times .445 \text{ cfs} = 11 \text{ cfs}$  in the mixing zone, and  $11 / 50\% = 22 \text{ cfs}$  in the entire stream.

Variable limits for metals based on stream flow would be acceptable, if an accurate flow-measurement device is in use in Big Creek.

The following formula should be used:

$$\text{Effluent concentration} = (\text{In-stream criterion} - \text{background}) \times \{[(\text{stream flow in cfs} \times 50\%) + .445 \text{ cfs}] / .445 \text{ cfs}\}$$

here (metals concentration - background)=.

$$\text{Pb} \text{ ----- } (0.012 - .004) \times 2^* = \underline{0.016 \text{ mg/L}}$$

$$\text{Cd} \text{ ----- } (0.10 - .002) = \underline{0.008 \text{ mg/L}}$$

$$\text{Zn} \text{ ----- } (0.245 - .04) = \underline{0.205 \text{ mg/L}}$$

$$\text{Tl} \text{ ----- } (0.008 - 0) = \underline{0.008 \text{ mg/L}}$$

\*adjustment for "total recoverable: dissolved" metals ratio; see addendum

#### **Note 5**

Outfall #004 - The suggested in-stream monitoring point is beyond an allowable ¼ mile mixing zone (below Scroggins Branch), and therefore "chronic" aquatic-life criteria are appropriate. Since Big Creek and the St. Francois River drain noncarbonate terrain which results in "softer" waters, and data from the St. Francois River indicates water averaging less than 125 mg/L of total hardness, metals criteria for the lowest hardness range (<125 mg/L) are appropriate as criteria. (Stream hardness data submitted by ASARCO also suggests hardness averaging less than 125 mg/L).

"Dissolved" metals should be monitored at the in-stream monitoring point. ("Dissolved" metals are now specified in the new Water Quality Standards {effective March, 1991} as the toxic form of metals.) Results consistently exceeding the following may indicate toxic conditions.

$$\text{Cd} \text{ ----- } 0.01 \text{ mg/L}$$

$$\text{Pb} \text{ ----- } 0.012 \text{ mg/L}$$

$$\text{Zn} \text{ ----- } 0.245 \text{ mg/L}$$

$$\text{Tl} \text{ ----- } 0.0063 \text{ mg/L}$$

#### **Note 6**

Outfall #006 - Scoggins Branch is an unclassified receiving stream and is subject to limits derived from acute criteria. No Z.I.D. is allowed on streams with a natural 7Q10 flow of less than 0.1 cfs. Runoff water must meet acute criteria according to 10 CSR 20-7.031.

#### **Note 7**

Whole-effluent toxicity (WET) testing - Acute toxicity tests should be performed as per the attached "special conditions" requirements. The "zone of initial dilution", beyond when acute toxicity must be met, would be negligible for Big Creek:

$$0.6 \times 50\% = 0.3 \text{ cfs mixing zone}$$

$$0.3 \text{ cfs} \times 10\% = 0.03 \text{ cfs zone of initial dilution}$$

Therefore, concentrations to prevent acute toxicity must be met at the end of the pipe, and the "acceptable effluent concentration: in a WET test is 100% effluent. Outfalls #001 - #003 should each be tested annually.

Reviewer: Tim Stallman

Date: 11-3-03

Unit Chief: Richard Laux